

In re Application of:

Application No. Unassigned

Art Unit: Unassigned

Filed: November 19, 2001

Examiner: Unassigned

For: BATTERY OPERATED  
LIGHTING DEVICE

1. A battery-operated lighting device for use with any one of a plurality of rechargeable battery packs, each battery pack having a pair of terminals and producing a different operating voltage, said battery-operated lighting device comprising:

a casing having first and second casing parts,

a lighting unit including a light bulb located at the first casing part, said light bulb having an optimum operating voltage,

a battery chamber located at the second casing part for receiving at least part of and locating any of the battery packs,

a pair of electrical contacts located in said battery chamber for making electrical connection with respective terminals of any of the battery packs located in said battery chamber, and

an electronic voltage regulating circuit within said casing and having an input and an output electrically connected to said electrical contacts and said light bulb, respectively, said circuit regulating the operating voltage of the battery pack in said battery chamber to substantially the optimum operating voltage of said light bulb, for operating said light bulb.

2. The battery-operated lighting device as claimed in claim 1, wherein the chamber has an opening through which a part of any of the battery packs is insertable into said battery chamber, said opening having a periphery with a shape and size substantially the same as the part of any of the battery packs for locating any of the battery packs in said battery chamber.

3. The battery-operated lighting device as claimed in claim 2, wherein said casing has an outer surface forming said battery chamber and lying substantially flush with any of the battery packs when located by said battery chamber.

4. The battery-operated lighting device as claimed in claim 1, wherein said casing has a lower end forming part of said battery chamber, said battery chamber having a bottom opening through which a part of any of the battery packs is insertable into said battery chamber, a battery pack in and protruding from said battery chamber acting as a weighted base for said battery-operated lighting device.

5. The battery-operated lighting device as claimed in claim 4, wherein said casing has an upper end that supports said lighting unit and a middle section including a handgrip.

6. The battery-operated lighting device as claimed in claim 1, wherein said voltage regulating circuit includes an integrated circuit chip producing a substantially constant output voltage that is the optimum operating voltage of said light bulb, irrespective of an input voltage falling within a range.

7. The battery-operated lighting device as claimed in claim 6, wherein said voltage regulating circuit includes a feedback loop connected from said output to said integrated circuit chip for indicating the output voltage.

8. The battery-operated lighting device as claimed in claim 6, wherein the input voltage is within a range substantially from 9.6V to 18.0V DC.

9. The battery-operated lighting device as claimed in claim 8, wherein the operating voltages of the battery packs are substantially 9.6V, 12.0V, 13.2V, 14.4V, 15.6V, 16.8V, and 18.0V.

10. The battery-operated lighting device as claimed in claim 1, wherein the optimum operating voltage of said light bulb is substantially 9.3V DC.

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